

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method of determining an optimal fusion current for fusion splicing ends of two optical fibers to each other using an electric discharge between two electrodes, ~~characterized by~~ comprising the steps of:
 - determining optimal parameters including an optimal current for fusion splicing ends of test optical fibers of a first kind to each other in first ambient conditions,
 - determining a value of a calibration light intensity for light emitted from the ends of the test optical fibers when splicing them using the optimal parameters in the first ambient conditions,
 - in second ambient conditions, determining a value of the current required to heat a piece of the test optical fibers to emit light of an intensity agreeing with the calibration light intensity,
 - calculating a proportional change by mathematically dividing the value of the heating current by the optimal current in the first ambient conditions, and
 - calculating, for optical fibers of a second kind different from the first kind, a fusion current to be used in splicing ends of optical fibers of the second kind in the second ambient conditions, by modifying, by the calculated proportional change, an optimal fusion current used for splicing optical fibers of the second kind in the first ambient condition.

2. (Currently Amended) A method according to claim 1, ~~characterized in that in~~ wherein during the step of determining the light intensity an average of the

intensity of light emitted from a predetermined region at the splicing position is calculated.

3. (Currently Amended) A method according to ~~any of claims 1—2,~~
~~characterized in that in the~~ claim 1, wherein during splicing and heating processes
~~pictures are captured of the splicing position~~ are captured and analyzed.

4. (Currently Amended) A device for determining a fusion current to be used
in splicing ends of two optical fibers to each other by means of an electric discharge,
comprising

- electrodes for forming an electric discharge therebetween,
- driver circuits connected to the electrodes for applying a high voltage therebetween
and making a heating current pass between the electrodes in the electric discharge,
- retaining and positioning holders for retaining ends of two optical fibers and for placing
the fiber ends, with end surfaces at each other or in abutting relationship with each
other, in a splicing position between points of the electrodes and in the electric
discharge,

~~characterized by~~ comprising:

- a measuring assembly for measuring the intensity of light emitted from ends of two
optical fibers retained by the retaining and positioning holders,
- first calculating circuits connected to the measuring assembly and the driver circuits,
the control circuits arranged to calculate a proportional change from a calibration fusion
current and a heating current,
- a memory connected to the measuring assembly and the calculation circuits for
storing a calibration light intensity and a calibration fusion current for test optical fibers,
a value of the proportional change calculated by the first calculating circuits, and fusion
splicing parameters including a fusion current for at least one optical fiber type different
from that of the test optical fibers, and

- second calculating circuits, connected to the memory, for calculating an optimal value of a fusion current, for fusion splicing ends of two optical fibers of the different type, from the fusion current stored for the different optical fiber type, by modifying by the stored proportional change.

5. (Currently Amended) A device according to claim 4, ~~characterized in that wherein~~ the measuring assembly includes a camera for capturing pictures of the splicing position, the first calculating circuits means arranged to determine the light intensity as an average light intensity from a predetermined field in a captured picture.

6. (Currently Amended) A method of controlling, in fusion splicing ends of two optical fibers to each other using an electric discharge between two electrodes, a fusion current passing between the two electrodes, ~~characterized by comprising~~ the steps of:

- determining optimal parameters including a value of an optimal current for fusion splicing ends of test optical fibers of a first kind to each other in first ambient conditions,
- determining a value of a calibration light intensity for light emitted from the ends of the test optical fibers when fusion splicing them using the optimal parameters in the first ambient conditions,
- in second ambient conditions, determining a value of the current required to heat a piece of the test optical fibers or of an optical fiber of the same kind as the test optical fibers to emit light of an intensity agreeing with the calibration light intensity,
- calculating a proportional change by mathematically dividing the value of the current required for heating by the value of the optimal current in the first ambient conditions,
- calculating, for optical fibers of a second kind different from the first kind, a value of a fusion current to be used in fusion splicing ends of two optical fibers of the second kind to each other, by modifying, by the calculated proportional change, a fusion current used for optical fibers of the second kind in the first ambient conditions, and

- controlling the fusion current used in fusion splicing ends of two optical fibers of the second kind to each other to take the calculated value.

7. (Currently Amended) A method according to claim 6, ~~characterized in that in~~ wherein during the step of determining the light intensity an average of the intensity of light emitted from a predetermined region at the splicing position is calculated.

8. (Currently Amended) A method according to ~~any of claims 6-7,~~ ~~characterized in that in~~ claim 6 wherein during the splicing and heating processes pictures ~~are captured of the splicing position~~ are captured and analyzed.

9. (Currently Amended) A device for controlling, in splicing ends of two optical fibers to each other by means of an electric discharge, a fusion current passing in the electric discharge, comprising

- electrodes for forming an electric discharge therebetween,
- driver circuits connected to the electrodes for applying a high voltage therebetween and making a heating current pass between the electrodes in the electric discharge,
- retaining and positioning holders for retaining ends of two optical fibers and for placing the fiber ends, with end surfaces at each other or in abutting relationship with each other, in a splicing position between points of the electrodes and in the electric discharge,

~~characterized by~~ comprising:

- a measuring assembly for measuring the intensity of light emitted from ends of two optical fibers retained by the retaining and positioning holders,
- first calculating circuits, connected to the measuring assembly and the driver circuits, for calculating a proportional change from a calibration fusion current and a heating current,

- a memory connected to the measuring assembly and the first calculation circuits for storing a calibration light intensity and a calibration fusion current for test optical fibers, a proportional change, calculated by the first calculating circuits, and fusion splicing parameters including a fusion current for at least one optical fiber type different from that of the test optical fibers,
- second calculating circuits, connected to the memory, for calculating a value of a fusion current from the fusion current stored for the different optical fiber type, by modifying it by the stored proportional change, and
- control circuits connected to the second calculating circuits and the driver circuits for controlling the driver circuits to make a heating current pass between the electrodes, for fusion splicing ends of two optical fibers of the different type, the heating current having the value calculated by the second calculating circuits.

10. (Currently Amended) A device according to claim 9, ~~characterized in that~~ wherein the measuring assembly includes a camera for capturing pictures of the splicing position, the first calculating circuits arranged to determine the light intensity as an average light intensity from a predetermined field in a captured picture.

11. (Currently Amended) A method of fusion splicing ends of two optical fibers to each other using an electric discharge between two electrodes, a fusion current passing between the two electrodes, ~~characterized by~~ comprising the steps of:

- determining optimal parameters including a value of an optimal current for fusion splicing ends of test optical fibers to each other in first ambient conditions,
- determining a value of a calibration light intensity for light emitted from the ends of the test optical fibers when fusion splicing them using the optimal parameters in the first ambient conditions,
- in second ambient conditions, determining a value of the current required to heat a piece of the test optical fibers or of an optical fiber of the same kind as the test optical

fibers to emit light of an intensity agreeing with the calibration light intensity,

- calculating a proportional change by mathematically dividing the value of the current required for heating by the value of the optimal current in the first ambient conditions,
- calculating, for the optical fibers to be fusion spliced to each other a value of a fusion current to be used in the fusion splicing, by modifying, by the calculated proportional change, a fusion current used for optical fibers to be fusion spliced to each other in the first ambient conditions, and
- controlling the fusion current used in the fusion splicing of the ends of the two optical fibers to each other to take the calculated value.

12. (Currently Amended) A method according to claim 11, ~~characterized in that in~~ wherein during the step of determining the light intensity an average of the intensity of light emitted from a predetermined region at the splicing position is calculated.

13. (Currently Amended) A method according to ~~any of claims 11—12,~~ ~~characterized in that in~~ claim 11, wherein during the fusion splicing and heating processes pictures ~~are captured of the splicing position~~ are captured and analyzed.

14. (Currently Amended) A device for splicing ends of two optical fibers to each other by heating in an electric discharge, a fusion current passing in the electric discharge, comprising

- electrodes for forming an electric discharge therebetween,
- driver circuits connected to the electrodes for applying a high voltage therebetween and making a heating current pass between the electrodes in the electric discharge,
- retaining and positioning holders for retaining ends of two optical fibers and for placing the ends, with end surfaces at each other or in abutting relationship with each other, in a splicing position between points of the electrodes and in the electric discharge,

~~characterized by~~ comprising:

- a measuring assembly for measuring the intensity of light emitted from ends of two optical fibers retained by the retaining and positioning holders,
- first calculating circuits, connected to the measuring assembly and the driver circuits, for calculating a proportional change from a calibration fusion current and a heating current,
- a memory connected to the measuring assembly and the first calculation circuits for storing a calibration light intensity and a calibration fusion current for test optical fibers, a proportional change, calculated by the first calculating circuits, and fusion splicing parameters including a fusion current for the optical fibers to be fusion spliced to each other,
- second calculating circuits, connected to the memory, for calculating a value of a fusion current from the fusion current stored for the optical fibers to be fusion spliced to each other, by modifying it by the stored proportional change, and
- control circuits connected to the second calculating circuits and the driver circuits for controlling the driver circuits to make a heating current pass between the electrodes, for fusion splicing ends of the two optical fibers to be fusion spliced to each other, the heating current having the value calculated by the second calculating circuits.

15. (Currently Amended) A device according to claim 14, ~~characterized in that~~ wherein the measuring assembly includes a camera for capturing pictures of the splicing position, the first calculating circuits arranged to determine the light intensity as an average light intensity from a predetermined field in a captured picture.